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Who cares about climate change? The mass media and socio-political acceptance of Canada's oil sands and Northern Gateway Pipeline

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ABSTRACT

Canada's proposed Northern Gateway Pipeline would carry unrefined bitumen from the Alberta oil sands to the coast of British Columbia for international export. Socio-political acceptance or opposition can determine the fate of such projects, and media coverage offers insight into public discourse, including how the project is framed. We analyzed print media coverage of the project in six Canadian newspapers, including 2097 articles published from 2008 to 2014. The objectives were threefold: 1) to characterize media framing of the project using a risk/benefit framework; 2) to identify regional differences in framing between the two affected provinces; and 3) to investigate the framing of environmental risk. Our findings demonstrate that public debate is dominated by environmental risk of the project with a tendency to frame the project as a trade-off between economic benefit and environment risk. Despite a strongly regional distribution of risks and benefits, we did not find substantial differences in framing between newspapers in the two affected provinces. Finally we found that the environmental risk frame was presented predominately according to potential local impacts due to pipeline or tanker rupture. The global impacts of climate change were rarely mentioned despite the large carbon footprint of the Alberta oil sands.

1. Introduction

This paper examines media framing of a proposed bitumen pipeline project in Canada: the Northern Gateway Pipeline (NGP). Proposed by Enbridge Inc., the NGP would bring diluted bitumen from the Alberta oil sands to the northern coast of British Columbia. Wüstenhagen et al. [1] explain that socio-political acceptance of energy is a complex interplay between the general public (or citizens), key stakeholders and policy actors—where media can reflect the discourse within and between these groups. Within this dynamic, media is not itself a neutral actor. Media coverage can frame issues in specific ways. It can also influence policy agendas and, conversely, be used strategically by policy actors to emphasize specific framings of the issues of the day [2]. Thus, although one of several factors, media can play a critical role in socio-political acceptance of energy projects by framing public debate [3–6]. As a result, analysis of news media is one way to gauge societal discourse about energy deployment [7–9].

Debate over the Northern Gateway Pipeline, other pipelines projects, and oil sands more generally are framed differently depending on the context and the source or speaker. As a result, varying degrees of emphasis are placed on the potential economic benefits; concerns about increased greenhouse gas emissions; risk to local air, land, and water resources (at extraction sites and along pipeline routes) [10–12]; and the role of First Nations [13,14]. While much of the environmental debate has focused on local risks (e.g. oil spill impacts), there is potential for the issue to become a major front in the debate regarding increasing production of Alberta oil sands more generally. Where construction of new export infrastructure is framed by proponents as necessary for continued oil sands expansion, opposition to new pipelines is a means to protest oils sands development and call for a more proactive climate change mitigation agenda [15].

From a climate change perspective, the issue of expanding the use of fossil fuels has obvious implications for a carbon-constrained world. The increased extraction, processing and distribution of unconventional fossil fuels present a particularly important threat to climate mitigation efforts both because it increases the available fossil fuel reserves and because of the additional energy input required to produce unconventional fuels. The Intergovernmental Panel on Climate Change and other researchers have stated that to increase the probability of limiting global warming to 2 °C or lower, only about 1000 Gt of CO_2 can be burned—an additional 500 Gt from current levels which is projected to be exceeded by 2040 even with existing and planned climate policies [16–18]. Researchers estimate that the current economically viable reserves far exceed this "carbon budget" (2900 Gt CO_2) with 11,000 Gt

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of CO_2 in resources that could become viable in the future [19]. To those concerned with threat of climate change, new pipeline infrastructure may be interpreted as an "emblematic issue" [20] representing the larger problem of society-wide inaction on climate change. This climate change framing has appeared in other pipeline controversies such as the vocal opposition to the Keystone XL pipeline by environmental organizations in the United States [15].

We explore these issues using the case of the Northern Gateway Pipeline, a project that has been highly controversial in Canada. The proposed pipeline holds important implications for climate change given that increased pipeline capacity is tied to expansion of the Alberta oil sands. The present study has three research objectives. The first is to characterize media framing of Canada's Northern Gateway Pipeline using a risk/benefit framework. The second objective is to identify any regional differences in framing between the two directly affected provinces: Alberta and British Columbia. For this particular project, Alberta stands to gain economically while British Columbia will bear a disproportionate amount of the environmental risk. Moreover, a study using 2013 survey of Canadian citizens [21] found greater support for the project in Alberta even when controlling for demographics and individual values. Building on this early work, our present study was designed to examine whether there was a quantitative difference in how national and regional media framed the project. The final objective of the study is to investigate the role of environmental risk framing—particularly the role of climate change versus other environmental impacts.

We achieve these objectives through analysis of print media coverage of the Northern Gateway Pipeline, specifically, 2097 articles published by six major Canadian newspapers between 2008 and 2014, inclusively. We find that the controversy was, as expected, framed predominately as an issue of economic benefit versus environment risk. Despite the regional distribution of risks and benefits, we do not find significant differences in framing between Alberta and British Columbia. In terms of environmental risk framing, climate change was only mentioned in 4.5% of the articles. Thus instead of framing the risk as global due to impact of climate change, environmental risk was presented as primarily local impacts due to terrestrial or aquatic spills of diluted bitumen or general environmental risk.

2. The Northern Gateway Pipeline

Oil sands are large bitumen deposits that consist of crude bitumen, silica sand, clay, minerals, and water. Extraction from Alberta's oil sands has increased significantly from 0.2 million barrels per day in 1990 to 1.9 million barrels per day in 2013 [22]. Oil sands production exceeds Canadian domestic demand and are therefore dependent on the ability to transport bitumen to markets [23,24]. Because existing pipelines are reaching capacity, proponents of oil sands development have proposed the construction of several new pipelines to better access international markets [25,26].

One such proposal is the Northern Gateway Pipeline that would extend from northern Alberta to the coast of British Columbia providing marine access to Asian markets. Proposed by Enbridge Inc., the project would include approximately 1170 km of twinned pipeline carrying on average 525,000 barrels per day of unrefined bitumen west for export and, in the opposite direction, 193,000 barrels per day of imported condensate (the substance used to dilute bitumen so that it can be transported by pipeline). In addition, a marine terminal with two tanker berths and 19 tanks for bitumen and condensate would be built in Kitimat, British Columbia. The terminal would have the capacity to serve 220 ship calls per year.

The NGP proposal was first launched in 2005 and in 2006 the federal Minister of the Environment referred the project to a joint review panel between the National Energy Board, the regulatory body charged with overseeing pipeline construction, and the Canadian Environmental Assessment Agency. At the request of the proponent, the review was postponed and thus it was not until May 2010, that Northern Gateway Pipelines Partnership Limited (a division of Enbridge Inc.) formally filed a regulatory application under the joint review panel. This signaled the beginning of what would become a highly contested review process.

The project was strongly opposed by environmental organizations in British Columbia out of concern for the impacts of an oil spill in remote and potentially fragile ecosystems along the pipeline route or in the coastal waters of northern British Columbia. The NGP project was also seen as a means to justify further growth of the Alberta oil sands and its carbon footprint [15]. A number of First Nations also opposed the project based on the potential impact to their ancestral lands and claims that the consultation and decision-making process violated their territorial and treaty rights.

Opposition to the project was evident in the regulatory review. The number of people who applied to speak at the joint review panel's public hearings was so large that the review process was extended by a year. Opponents also raised issues with the review process itself. One contentious issue was that the terms of reference of the joint review panel did not officially account for the upstream greenhouse gas emissions from oil sands production even though the economic benefits of the same production were included in the project rationale [14]. In addition, in the midst of the review process, the federal government made significant changes to the legislation governing the process. Among other things, these changes set a two year timeline for project review, limited the scope of the "environmental effects" considered, limited public participation, and allowed the federal cabinet to override the ruling of the joint review panel [27]. Although these changes did not apply to the NGP review process, they were seen as a government response to public opposition to the project and an attempt to streamline the review of subsequent pipeline projects. Fuelling the controversy, in 2012 the Prime Minister and several cabinet ministers made negative public statements about opponents of the project [28]. The provincial government of British Columbia also weighed into the debate by formally opposing the project in the review process and issuing five conditions that would need to be met before it would support the project. In December 2013, the joint review panel submitted its report to the federal government recommending approval provided 209 conditions were met. The panel concluded: "The potential adverse environmental outcomes are … outweighed by the potential societal and economic benefits" [29].

In June 2014, the federal government formally granted conditional approval based on the joint review panel's recommendations. In 2016, with the certificates due to expire at the end of the year, Enbridge filed for a three-year extension. At the time, the project was facing a multitude of legal challenges from eight First Nations, four environmental organizations, and one trade union. It had also failed to secure supply contracts that were necessary conditions to proceed with the project. In June 2016, the Federal Court of Appeal overturned the federal approval based on the finding that the federal government had not adequately consulted with indigenous communities along the pipeline route [30]. In late 2016, a Liberal federal government (elected in 2015 after the project was approved) rejected the project. It also recommitted to a campaign promise to ban tanker traffic on British Columbia's northern coast effectively ruling out subsequent proposals for the project.

3. Framing energy and climate change in the media

Wüstenhagen et al.'s [1] framework for social acceptance contains three dimensions: socio-political acceptance, community acceptance, and market acceptance. As such it entails more than social license or the ability "…of a company to engage in a certain activity in relative harmony with the local community and other stakeholders" ([31], p. 51). Social acceptance also encompasses the acceptance of technologies and policies by the market and the public, more broadly. Because the oil and oil transportation industries are well established in Canada, in this case,

market acceptance is not of particular concern. However both public opinion and the policy and regulatory regime, the socio-political acceptance, are of particular importance to the Northern Gateway project—and they are both influenced by and reflected in media coverage.

Research has shown that public attitudes toward environmental technologies are shaped by the media [32]. The influence that media has on public opinion varies depending on the issue [2]. However, since the potential for media representation to influence public discourse and perception is large, it is an important site for empirical research [33]. Studies have also shown the media can influence policy agendas, particularly in regards to environmental issues that are not directly perceived by most citizens, such as climate change [34,35]. Similarly, policy actors can use the media strategically.

One way that media influences social acceptance is by framing issues in specific ways. Framing involves selectively emphasizing particular elements or interpretations of an issue [36,37] in order to affect how individuals and groups understand unfamiliar and complex phenomena with reference to their own experiences and predispositions [38,4]. Journalists frame issues as a means to make complex social and environmental issues understandable [37]. A rich body of literature exists regarding how framing of technologies, policies, science, and social issues can influence societal perceptions and decision-making processes [39].

One recurring frame within environmental discourses is the trade-off between the economy and the environment [40]. The idea that environmental protection necessarily comes at the expense of economic wellbeing is a deeply embedded frame perpetuated by such things as: environmental standards, educational curricula, engineering and operational practices, and international regimes [40]. Concern for the environment has introduced a number of alternative ways to frame the relationship between economic development and environmental protection. For example, one alternative frame is ecological modernization, which purports to wed current economic structures with environmental protection to create “green growth” [41,42].

There are a number of studies documenting media coverage of energy issues and, in the past five years, this includes a growing number that examine unconventional fossil fuels. This literature reinforces that technology is taken-up or “domesticated” differently in different countries [43]; that political and geo-political contexts are important to media frames [44]; and that the process of development may be as or more important than the technology itself [45]. As a result, caution is necessary when generalizing across technologies or regions.

At a high level however, analyses of unconventional fossil fuels have found that media coverage maintains risk-benefit framing [46] often with a bias toward economic benefits. A study of natural gas fracking in Texas found that media consistently reproduced the pro-development frames used by proponents while there was much more variation in the use of opposition frames [47]. This pattern also played out in Canadian media. In their examination of environmental justice in Canadian media, Deacon et al. [48] found that “…the mainstream media frequently positioned economic advancement…directly against any environmental or justice concerns” with the end result highlighting jobs and economic stability and minimizing the social and environmental impacts of the development (2015, p. 426). Two separate media analyses of the Alberta oil sands found that media coverage was predominately framed in economic terms and was less attentive to environmental, political, social, scientific, and other dimensions [49,6]. The implication of these studies is that the economic benefits of unconventional fossil fuel development, like increased gross domestic product and job creation, may be more frequently and consistently cited in media than the environmental and social risks.

One notable Canadian study [50] analyzed news articles in the Calgary Herald newspaper arguing that coverage of the Alberta oil industry presents the industry as inept at corporate relations and a unable to protect itself from a well-funded environmental critiques that originate outside the province. This particular framing of industry versus the environment then does further work by justifying government intervention in order to protect a vulnerable, local industry from outsiders [50]. Thus, although the framing of economy versus environment appears straightforward, it has important implications for public debate, public policy, and the legitimacy of actors engaged in the policy debates.

It is however, possible to reframe public debate. An analysis of unconventional gas drilling in the Marcellus Shale found that, in some cases, media can be used to reframe environmental issues. In this case, citizens and environmental organizations successfully reframed gas drilling in the Marcellus Shale to incorporate more discussion of environmental risk [51].

The above studies suggest that media representation of unconventional fossil fuel development is an important consideration in understanding public controversy and socio-political acceptance energy development. However, research examining the Canadian context remains sparse. Given the specificity of technology development and media representation, the relative absence of Canadian case studies constitutes a gap in the literature that this study aims to fill.

In contrast with the still emerging literature on unconventional fossil fuels, there is a well-established literature examining media representations of climate change which generally finds that climate change is a particularly challenging issue to effectively communicate due to characteristics such as its distant impacts and scientific uncertainty [52]. Researchers also find that media tends to entangle scientific claims with ideological standpoints [53] and climate change coverage is strongly connected to policy developments and does not follow a ‘natural’ cycle [54].

In line with international research, studies of Canadian media have found that coverage of climate change is typically portrayed as a national or global problem rather than a local issue [55] and that it focuses on impacts and mitigation rather than adaptation [56]. More specific to Canada, a longitudinal study of national print media found that over time it is becoming less nuanced and thematically narrower with “less attention…paid to issues of causation, scientific claims, and potential impacts, while more attention is granted to how climate change superficially intersects with everyday politicking and business issues” [57]. Finally, and of direct interest to our study, a comparison of media framing in the United States, Canada, and international newspapers found that media in all regions were hesitant to frame climate change in relation to oil reduction solutions [58].

In light of this literature we expect that media coverage of the Northern Gateway Pipeline will be presented using the typical economic benefits versus environmental risks frame. Although the climate change impacts of new pipeline infrastructure are a major concern, the extent that it will be present in media coverage remains unclear. On one hand, popular representations of the controversy over the Keystone XL pipeline suggest that new pipeline infrastructure may be emerging as an “emblematic issue” that stands in for a larger problem or issue [20]. Specifically, new pipeline infrastructure may become emblematic of society-wide inaction on climate change. On the other hand, the difficulty of communicating climate change and the reluctance to frame it in relation to oil reduction strategies call into question the extent to which environmental risks will be framed in relation to climate change.

4. Conceptual framework: adapting the socio-political evaluation of energy deployment (SPEED) framework

To explore the framing of the NGP project in Canada, we base our conceptual framework on the socio-political evaluation of energy deployment (SPEED) framework [59]. The SPEED framework was developed to guide research exploring the interconnections among various actors and socio-political factors that can influence the adoption of new energy technologies and infrastructure at the regional level, including laws, regulations, institutions and policy actors, and perceptions of risk and benefits [59]. The framework draws from theories of transition

management, risk perception, policy analysis, and technology diffusion. It has been the basis for multiple studies in different energy contexts, including the deployment of wind turbines [60,61], carbon-capture and storage [62,63], and smart grids [64]. The framework has been used with numerous methods, including media analysis, to categorize the media representation of energy projects according to six discrete categories: technical, economic, environmental, health and safety, political and aesthetic/cultural. The SPEED framework has also been used to evaluate regional differences in discourse, policy approach, and response to energy technologies [33].

For our purposes, the SPEED framework is particularly useful as an energy specific framework that is designed to evaluate regional differences. We use the basic categories of the SPEED framework as a starting point for our analysis adding the category of 'First Nations' to account for the important role of Indigenous Canadian actors in the NGP project. As explained further in the next section, we coded risk/benefit statements found in media coverage of the Northern Gateway Pipeline for the following frames: Economic, First Nations, Technological, Health & Safety, Socio-cultural, Political and Environmental. Several frames also included sub-categories relevant to our research objectives.

5. Methods

Our media analysis examined newspaper coverage of the Northern Gateway Pipeline from six Canadian newspapers. We chose newspapers that represent the top circulating newspapers nationally (Globe and Mail, National Post) and in the two provinces directly impacted by the pipeline, Alberta (Edmonton Journal, Calgary Herald) and British Columbia (The Province, Vancouver Sun). It should be noted that five of the six papers are owned by the media conglomerate, Postmedia Network Inc. (the Globe and Mail is not). This has two potential implications for our findings. First, newspapers in the Postmedia chain may be sharing materials and stories amongst papers ultimately masking regional differences in public discourse. Second, Postmedia is acknowledged to have "ideological sympathies" with the oil industry (). The Globe and Mail is also considered to have a conservative or pro-business slant [6]. While the newspapers still have a mandate to objectively cover the issues of the day, we can expect that the results may be slanted toward the NGP project and oil sands development in general. Since this is the reality of media ownership in Canada, and this analysis only deals with media representation, we can only speculate on how accurately the media represents public discourse. However our analysis does compare the differences in the coverage between the Globe and Mail and all six sources combined to explore the potential for bias due to ownership structure.

We used the database Factiva to retrieve the articles using the search term "northern gateway" occurring in the first 200 words of articles that were 300 words or greater. We collected all newspaper articles appearing between January 1, 2006 and September 1, 2014. The 2006 start date was chosen to cover the entire range of project from it early development through to its conditional approval in 2014. All articles collected were reviewed and classed into three categories: category A articles were substantively about the project, category B articles included a specific discussion about the project, and category C articles only mentioned the project or the search terms in passing. Articles in the category C were discarded, leaving 2097 articles from 2008 to 2014 (no articles that met the criteria for categories A and B were found for 2006 or 2007). In terms of total news coverage, the Alberta newspapers have more coverage of the issue than either the British Columbian or national newspapers. Table 1 summarizes the distribution of articles across newspapers:

All articles were coded using NVivo 10 qualitative analysis software. One author coded a subset of articles by developing and testing a codebook with descriptive memos for each code. A team of six coders then used the established codebook to code the entire set of articles. Before coding began, three calibration exercises were completed with a sample of 100 articles; this sample size of approximately five percent was based on Lacy and Riffe's [65] suggestion for very large samples (1996). Each calibration involved testing individual coders against the aggregate of all the other coders and follow-up discussions to refine the codebook and coding procedures. Inter-coder reliability was tested using Cohen's kappa coefficient for the final calibration sample. Appendix A contains a table of the coefficients for each code.

Table 1
Newspaper Articles Analyzed.

Newspaper	Number of articles
Vancouver Province	155
Vancouver Sun	445
British Columbia Total	*600*
Calgary Herald	477
Edmonton Journal	394
Alberta Total	*871*
Globe and Mail	372
National Post	254
National Total	*626*
Total articles	2097

The articles were coded by statements (or phrases) according to several categories. On the first reading articles were coded for: actors and institutions mentioned; feasibility statements claiming the project was or was not likely to succeed; metaphors; mentions of other energy projects; and the component focus (e.g. pipeline, oil sands, marine terminal, etc.) of each statement. On the coders' second read of the article, statements claiming a risk, a benefit, or a defensive statement claiming no harm were coded for high-level categories using the SPEED framework (Economic, First Nations, Technological, Health & Safety, Socio-cultural, Political and Environmental) with several categories including more precise subcategories. Each statement could be coded into multiple categories.

6. Results

Fig. 1 summarizes newspaper coverage of the Northern Gateway Pipeline by year, where media coverage first increased in 2010 when the regulatory review of the project began. The coverage peaked in 2012 during heightened political activities, including public consultations, changes to the federal legislation governing the review of pipelines, and a series of high profile statements made by members of the federal government. Coverage subsequently decreased in 2013 and 2014 even though the joint review panel issued its report in 2013 and the project was conditionally approved in 2014. The general trend in coverage is mirrored in all of the individual newspapers except for the Vancouver Sun that had consistent levels of coverage each year from 2012 to 2014.

Our analysis of risk and benefit statements (Fig. 2) illustrates that the benefits were primarily framed as economic while environmental risks dominated newspaper coverage of the project. Economic benefits included mentions of jobs created during the construction of the pipeline and the overall benefit of the oil sands industry to the Canadian economy. One supporter was quoted as saying "As a resource driven economy, there's no question that Canada needs access to tidewater and the project is going to generate billions in terms of spinoffs, thousands of jobs and benefits to communities" [66]. The economic benefits frame also included some dire predictions for the Canadian economy if the pipeline were not built. For example, citing an Enbridge lawyer, the Globe and Mail reported, "Canadians could face "economic catastrophe" if the country continues to rely almost solely on the U.S. and that export market stops taking oil from Canada" [67].

Environmental risks were by far the most frequently mentioned risk. The most frequently mentioned environmental risks were 1) general environmental risks (with no specific mention of details), 2) the risk of

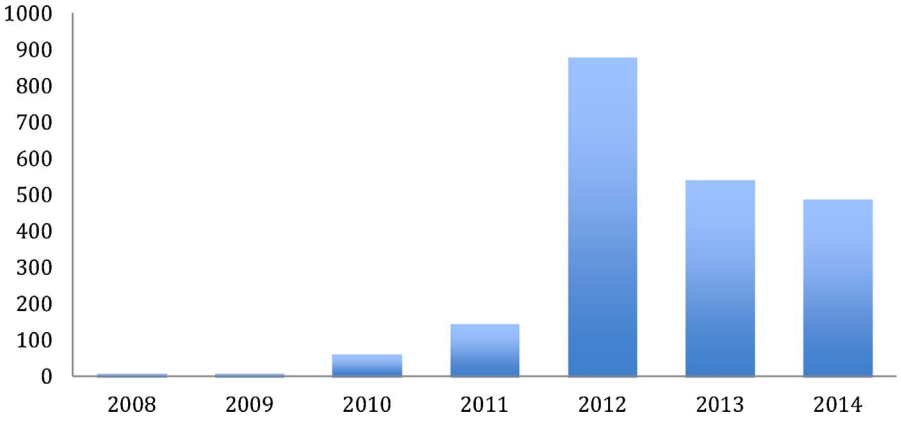

Fig. 1. Distribution of articles by year (number of articles in population).

oil spill and tanker activity in the coastal waters of British Columbia, and 3) the risks of oil spills on terrestrial ecosystems. As one BC paper put it,

> *"…ultimately, the most critical element of the proposal is the risk it poses. First, pipelines do leak. Just witness this week's oil spill from an Enbridge pipeline into a river in southern Michigan.… And this northern pipeline would cross a thousand streams and rivers, including two of Canada's most important salmon-bearing watersheds, the Skeena and the Fraser."* [68]

The second most frequently mentioned risk was the political risks of the project—particularly the possible backlash against politicians for supporting the pipeline. Several economic risks were cited, including the possibility of stranded assets, the relative cost and marketability of oil sands product, and public liability for environmental damage. Finally, First Nations were framed as potentially benefiting from the project and as both being at risk from the project and being themselves a risk to the project (via their constitutionally protected territorial rights).

The pattern of economic benefits versus environmental risks remains when we combine "no harm" statements (defensive statements that minimize or negate risk) with benefit statements to create a category that we call "pro", meaning statements that support the project. This reclassification adds over 400 statements to the environmental benefit category, suggesting the project would not pose significant environmental risk. For the other categories, the benefits and the pro columns are not substantially different.

Thus, as anticipated, the Northern Gateway Pipeline project is framed primarily as a trade-off between economic benefit and environmental risk. The large number of "no harm" statements in the environment category compounds this finding by illustrating the extent to which the media coverage weighed the overall environmental risk of the project—either citing environmental risk or attempting to minimize potential environmental risks.

This pattern holds when the Globe and Mail articles are isolated from the other (Postmedia) sources. However, as Fig. 3 illustrates, fewer articles in the Globe and Mail mention economic benefits and more articles mention the risks in all other categories except 'technical' (which is rarely framed in risk/benefit terms). In the Globe and Mail, 52% of sources discuss environmental risks. This is more than twice the number than cite economic benefits (24%). These findings are consistent with Way [6] who found that the Globe and Mail was more likely to frame oils sands coverage as an environmental story than the National Post (Postmedia). However, in the same study, both papers were far more likely to frame the oil sands as an economic story than as an environmental story [6]. Thus, considering that the Globe and Mail, a relatively conservative paper, was overwhelmingly framing the Northern Gateway Pipeline in terms of environmental risk suggests that this was clearly the dominating issue in public discourse.

We also coded feasibility statements indicating that the project was

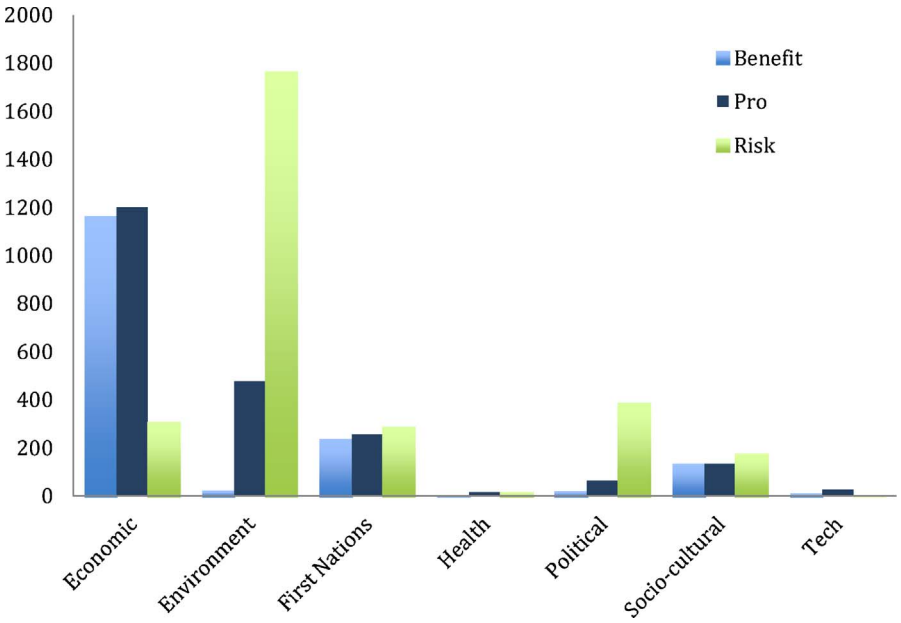

Fig. 2. Distribution of benefit, pro, and risk statements (number of mentions, all articles).

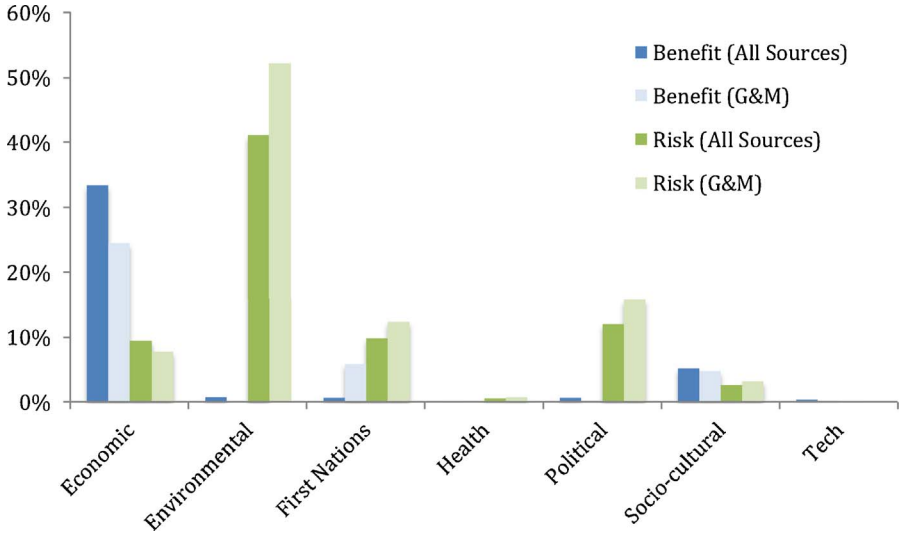

Fig. 3. Comparison (of benefits and risks) between the Globe and Mail and all sources combined (% sources).

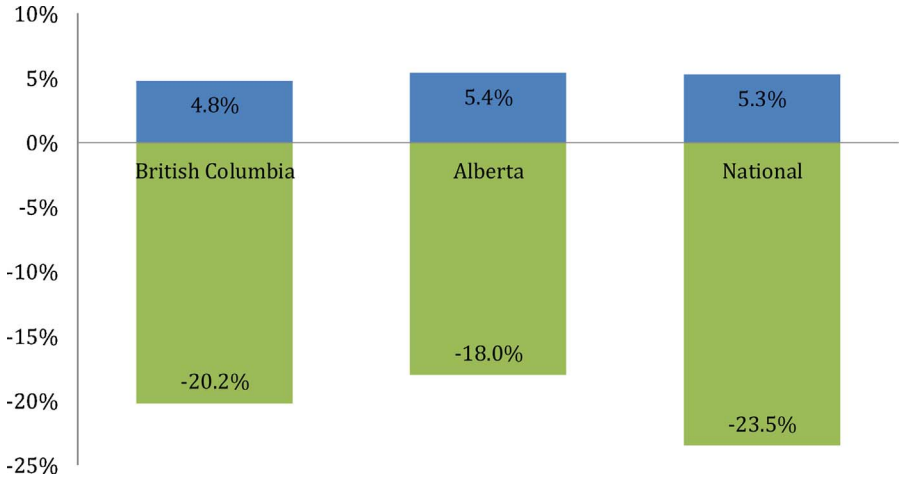

Fig. 4. Distribution of project feasibility statements by region (% of sources, all articles).

likely or unlikely to succeed. Fig. 4 illustrates that 20% of the articles making a negative statement about feasibility, which was far more frequent then positive mentions of feasibility. First Nations, and their ability to delay and/or halt the project through legal processes, were the most cited reason the project might fail (11% of all articles). Also cited, in decreasing order, were general statements about project infeasibility (6%), political infeasibility (4%), regulatory infeasibility (3%), and economic infeasibility (0.5%). Only 5% of all articles made positive statements regarding project feasibility and these were most likely to be general statements (2%) that did not specify economic, political, or regulatory feasibility. Although Fig. 4 shows some difference between Alberta, British Columbia, and National media, overall the coverage is pessimistic about the project.

The similarity in coverage between British Columbia, Alberta, and the national newspapers is also seen in the aggregate of risk, benefit, and pro statements as broken down by region (Fig. 5). The Alberta newspapers have a slightly larger percentage of articles citing the benefits of the project (42%) while the national papers show a slightly larger percentage of articles referring to risks (55%).

These differences are relatively minor suggesting that, in a quantitative assessment, the coverage of the project does not vary substantially by region. However, this finding does not speak to the qualitative differences that might be found between individual papers or regions (e.g. through discourse analysis demonstrated by Gunster and Saurette [50] nor does it analyze the coverage based on the sources quoted or the type of article (e.g. opinion, business reporting). Since all the regional papers we analyzed were part of the Postmedia chain, it is also possible that regional differences were masked by the sharing of resources and/or the overall slant of Postmedia chain.

Finally, Fig. 6 illustrates the distribution of environmental risk mentions across our selected articles, according to the sub-categories: climate change risks, coastal risks, terrestrial risks, and a "general/other" risk category that includes other types of environmental risks, as well as general statements of environmental risk without further specification. General environment risk or "other" environmental risks (not fitting into any of the other categories) dominated the media coverage, indicating that environmental concerns were rarely explained in any depth. Coastal risk was the next most frequently mentioned sub-category, followed by terrestrial environmental risks. The risk of climate change is present in only 4.5% of the articles, and is thus the least frequently cited environmental sub-category. In other words, in the media coverage of the Northern Gateway Pipeline, climate change risks are overshadowed by the local environmental impacts of the proposed pipeline and the associated tanker activity on British Columbia's northern coast.

Moreover, qualitative analysis of the few statements that mention the risk of climate change finds few articles that elaborated on climate change or positioned the project against climate mitigation efforts. Instead, there was a tendency to simply mention the risk of climate change, often in a list that included other environmental risks or First Nations objections to the project. For instance, an article in the Calgary Herald summarized opposition with the following statement: "The

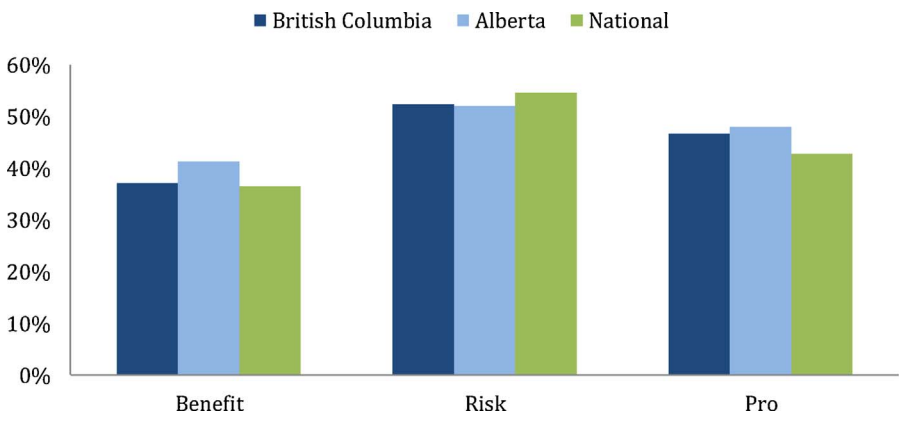

Fig. 5. Regional Distribution of benefit, risk, and pro statements (% of sources, all articles).

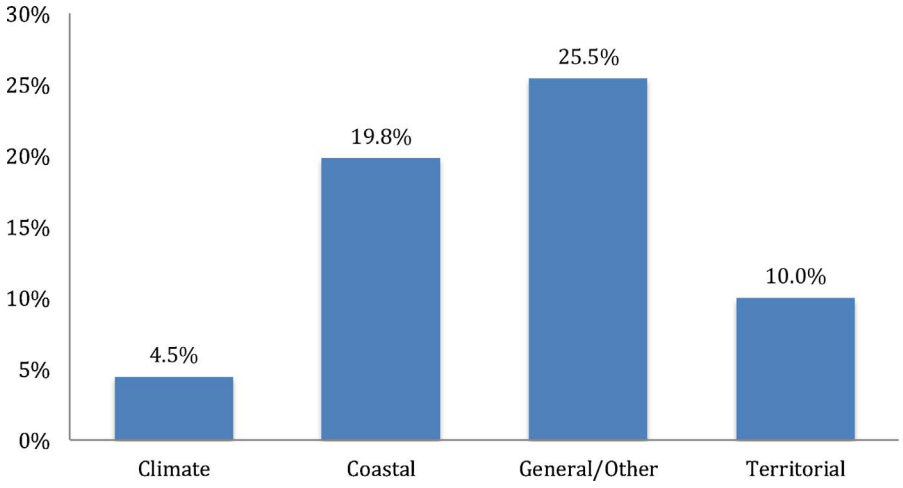

Fig. 6. Distribution of environmental risks by sub-categories (% of sources, all articles).

proposed line has prompted fierce opposition in B.C., particularly from environmental and First Nations groups concerned about potential oil spills and increased greenhouse gas emissions from expanding the oil sands." [69]

7. Discussion

Overall our analysis of media framing shows a predictable emphasis on the trade-off between economic benefits and environmental risk, where the debate over the Northern Gateway Project is largely focused on whether the economic benefits (e.g. jobs and increased production of the Alberta oil sands) warrant the environmental risks of shipping diluted bitumen over ecologically and culturally significant landscapes and waters. Our analysis indicates that environmental risk dominated the media coverage of the NGP. Environmental risk was mentioned by 41% of the articles and by 52% of the articles published in the Globe and Mail. This is somewhat surprising given previous research that found articles about the Alberta oil sands in the Globe and Mail and the National Post (the national papers analyzed here), were predominately economic stories [6]. The implication is that public debate on the NGP appears to be dominated by the potential environmental risks of the project. This is consistent with the ultimate fate of the project that was, in 2016, rejected due to a host of issues including widespread opposition to the project by First Nations and residents of British Columbians.

The description of the NGP as a question of jobs versus the environment may simply be the unconscious repetition of a deeply embedded frame that underpins many discussions of environmental risk [40]. It may also be, in this case, exacerbated by the strongly regional distribution of risk and benefits that may support an antagonistic "us-versus-them" debate (e.g. Alberta economic benefits versus British Columbia environmental risks), rather than encouraging broader discussions regarding alternative energy futures or greening the economy.

Despite the regional distribution of risks and benefits along provincial lines, we did not find differences in framing between Alberta and British Columbia. This finding would suggest that media may not be a major factor in the regional differences in support found in Axsen [21]. Alternately, it may be necessary to analyze individual newspapers and/or to use a more detailed qualitative analysis such as discourse analysis to capture the regional differences in coverage. The uncertainty in interpreting this result speaks to the limitations of our study and particularly to the fact that all of the regional papers we analyzed are owned by Postmedia.

In terms of the environmental risk frame, we find that media coverage often did not explain such risks beyond the general term "environment"—that is, articles did not elaborate on particular impacts. This finding would serve to perpetuate the belief that there is an inevitable trade-off between economic development and environment protection. It does so by leaving the category of "environment" underspecified and not elaborating on the potential economic impact of environmental harm such as the potential impacts to commercial fisheries and tourism, industries that rely on clean and functioning ecosystems. When a specific environmental risk was made explicit, it most often referred to local impacts (coastal and terrestrial) due to bitumen spills and other issues related to tanker activity on British Columbia's coast. Climate change was marginal in the media coverage, mentioned in only 4.5% of the articles. Potential explanations for this absence could be that climate change is difficult to communicate [52] or that there may be reluctance to align one of the country's major (greenhouse gas emitting) industries with climate change [58]. Further, previous empirical research indicates that only minorities of the citizens in both

British Columbia and Alberta believe that the Northern Gateway Pipeline will increase overall greenhouse gas emissions [21]. As a result, project opponents may have been strategic in their emphasis of local environmental impacts, choosing to appeal to the immediate interests of the affected communities.

Given the conservative nature of the newspapers in our sample and the fact that the Globe and Mail (as the least conservative paper in the sample) had a greater number of sources mentioning environmental risks (52% versus 41% for all sources) and a lower number mentioning economic benefits (24% versus 33% for all sources), we can interpolate that more liberal publications would lean even more toward framing the project as an issue of environmental risks. It may be that the environmental risks, including the risks of climate change, would also be given more detailed and nuanced treatment in these publications.

The absence of climate change from the public debate may also be related to the terms of reference of the joint review panel that did not officially account for the upstream greenhouse gas emissions from oil sands production [29]. Although the relationship between media and policy is complex and bi-directional [2] and it is well-known that climate change is challenging to communicate [52], it seems likely that if the regulatory review did consider climate change impacts that it would have had a greater presence in media representations and, ultimately, in the public debate of the project.

Regardless of the reason for the relative absence of climate change in the media coverage, our findings suggest that the media coverage of the Northern Gateway Pipeline did not present the project as an "emblematic issue" [20] standing in for the larger problem of societal inaction on climate change. Although climate change is evoked and (occasionally) referenced, the media tends to frame the project on the grounds of more immediate, local environmental concerns. To the extent that the Northern Gateway Pipeline has become emblematic, it could to stand for a critique of the regulatory system. For many opponents, the regulatory system is problematic in that it appears to favor the fossil fuel industry and does not fully address the range of environmental, social, and economic risks posed by the project. For proponents (including both industry and, to a certain extent, government) the procedural requirements and long timelines of regulatory process hinder development. Thus for both sides, the regulatory review of the NGP illustrated the problems with energy decision-making in Canada. How these narratives take shape in the policy literature is the topic of our on-going research.

8. Conclusions and implications

We have used media analysis to provide one perspective of the public discourse surrounding the Northern Gateway Pipeline with particular interest in the presence of climate change risk. Although the environmental risk of the project dominated media coverage, we find climate change to be largely missing from discourse during the study period (2008–2014) and formally absent from the regulatory review process. These omissions can only hinder the efforts of policymakers seeking to achieve climate change goals and climate policy advocates from engaging in meaningful dialogue about the relationship between unconventional fossil fuel development and climate mitigation targets. One implication is that policymakers and environmental advocates seeking climate objectives could work more deliberately to bring the climate change risk into public discourse. However, from this analysis, we are unable to judge whether or not climate advocates have attempted this but been unsuccessful. Alternately, it may be that the conservative-bias of the top circulating newspapers in Canada does not accurately capture public debate regarding climate change. In future, it would be worthwhile to do a similar study that included more liberal-leaning news outlets.

Nevertheless, a fuller discussion of climate change mitigation and adaptation might help introduce alternative discourses into public debate particularly discourses that offer more integrative possibilities for transitioning toward a low carbon economy as opposed to assuming that environmental protection necessarily comes at the cost of jobs and economic prosperity. As we have seen in this case, this dualism appears to be self-reinforcing. Thus there appears to be a role for both emphasizing the risk associated with climate change in public discourse and for introducing discourses that complicate the easy dualism between environmental risk and economic benefit. Alternatives discourses are not an end in themselves—for instance by focusing on "win-win" scenarios, an ecological modernization discourse might also erase important components of public concern [41,20]. However, adequately addressing climate change concerns would seem to require moving beyond a frame that suggests we must choose between environmental protection and economic development and denies the possibility that the two are mutually dependent.

As of November 2015 (after our media analysis time period), a newly-elected national government (Liberal party) has been taking some steps in this direction, including making commitments to broadening the scope of on-going pipeline reviews to include both upstream and operational greenhouse gas emissions. On the surface, the inclusion of total lifecycle greenhouse gas emissions in the regulatory process seems to be a straightforward way to nudge the discussion toward the cumulative and global impacts of climate change. We know that media coverage of climate change is linked to policy developments [54] yet, at the same time, this relationship is complex [2]. Moving forward with forthcoming announcements about a climate policy framework to meeting deep carbon reduction targets established in Paris, the Canadian government will also have to state how any expansion of unconventional fossil fuel infrastructure will fit within the overall climate targets. The anticipation of shifting policy discourses—that may or may not successfully incorporate the impacts of climate change—also points to the need to compare a greater diversity of Canadian media in order to track how this is being translated to and/or contested in public discourse.

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Appendix A. Cohen's Kappa values by code for calibration data (each coder is compared against the aggregate of the other coders).

Code	Coder 1	Coder 2	Coder 3	Coder 4	Coder 5	Coder 6
Economic\Benefit	0.755645118	0.753645791	0.713804714	0.779186532	0.771084848	0.713804714
Economic\No harm	0.996632997	0.996632997	0.996632997	0.996633	0.996632997	0.996632997
Economic\Risk	0.870477703	0.870480743	0.858108108	0.867078378	0.861226351	0.858108108
Environmental\Climate\Benefit	1	1	1	1	1	1
Environmental\Climate\No harm	0.996621622	0.996621622	0.996621622	0.996621622	0.996621622	0.996621622
Environmental\Climate\Risk	0.966203041	0.978331081	0.962837838	0.968193581	0.98365473	0.962837838
Environmental\Coastal\Benefit	1	1	1	1	1	1
Environmental\Coastal\No harm	0.964930068	0.963876014	0.962837838	0.977767568	0.964925338	0.962837838

Environmental\Coastal\Risk	0.828467568	0.841466216	0.804054054	0.862534459	0.845261486	0.804054054
Environmental\Env other + general\Benefit	0.993243243	0.993243243	0.993243243	0.996621622	0.993243243	0.993243243
Environmental\Env other + general\No harm	0.931109122	0.925675676	0.925675676	0.936971959	0.936201014	0.925675676
Environmental\Env other + general\Risk	0.790391892	0.796558446	0.756756757	0.824356081	0.79521723	0.756756757
Environmental\Terrestrial\Benefit	1	1	1	1	1	1
Environmental\Terrestrial\No harm	0.989864865	0.989864865	0.989864865	0.993243243	0.989864865	0.989864865
Environmental\Terrestrial\Risk	0.918127703	0.929775338	0.902027027	0.931005743	0.931138176	0.902027027
First Nations\Benefit	0.979086824	0.979086824	0.966216216	0.975506081	0.971803041	0.966216216
First Nations\No harm	0.989864865	0.989864865	0.989864865	0.989864865	0.989864865	0.989864865
First Nations\Risk	0.894213468	0.894344781	0.878787879	0.909482155	0.886354882	0.878787879
Health and safety\Benefit	0.996621622	0.996621622	0.996621622	0.993243243	0.996621622	0.996621622
Health and safety\No harm	0.996621622	0.996621622	0.996621622	0.99662162	0.996621622	0.996621622
Health and safety\Risk	0.993265993	0.993265993	0.993265993	0.9581633	0.993265993	0.993265993
Political\Participation + democracy\Benefit	0.993243243	0.993243243	0.993243243	0.999472297	0.993243243	0.993243243
Political\Participation + democracy\No harm	1	1	1	1	1	1
Political\Participation + democracy\Risk	0.957909091	0.952861953	0.952861953	0.968852525	0.952607744	0.952861953
Political\Political − other\Benefit	0.996632997	0.999474074	0.996632997	0.996632997	0.996632997	0.996632997
Political\Political − other\No harm	0.99956431	0.996632997	0.996632997	0.993265993	0.996632997	0.996632997
Political\Regulatory streamlining\Benefit	0.996632997	0.996632997	0.996632997	0.996633	0.996632997	0.996632997
Political\Regulatory streamlining\No harm	0.993265993	0.993265993	0.993265993	0.99326599	0.993265993	0.993265993
Political\Regulatory streamlining\Risk	0.910431313	0.936458923	0.909090909	0.993265993	0.925360943	0.909090909
Socio-cultural\Public good\Benefit	0.977914141	0.977067003	0.966329966	0.986531987	0.972123906	0.966329966
Socio-cultural\Public good\No harm	1	1	1	1	1	1
Socio-cultural\Public good\Risk	0.993265993	0.993265993	0.993265993	0.974303367	0.993265993	0.993265993
Socio-cultural\Socio-cultural other\Benefit	0.986531987	0.986531987	0.986531987	0.986531987	0.986531987	0.986531987
Socio-cultural\Socio-cultural other\No harm	0.996632997	0.996632997	0.996632997	0.993265993	0.996632997	0.996632997
Socio-cultural\Socio-cultural other\Risk	0.972228956	0.972228956	0.96969697	0.9722896	0.974423232	0.96969697
Technological\Benefit	0.986531987	0.986531987	0.986531987	0.9865199	0.986531987	0.986531987
Technological\No harm	0.993265993	0.993265993	0.993265993	0.99326599	0.993265993	0.993265993
Technological\Risk	1	1	1	1	1	1

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